

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Hr: \_\_\_\_\_

# Groundwater Contamination Webquest

In this webquest you will discover what groundwater contamination is and why we need to know about it. You will also learn about various sources of contamination, how to investigate groundwater contamination, and ways to prevent it.

Go to the following website: <http://techalive.mtu.edu/meec/module04/title.htm>

Please read each page and participate in any 'activities' that it directs you to do. Use the pages and activities to answer the following questions.

## Why is Groundwater important?

1. What percent of people in the U.S. use groundwater? \_\_\_\_\_
2. What percent of water used for farming is groundwater? \_\_\_\_\_
3. List 5 things that the groundwater is used for. \_\_\_\_\_  
\_\_\_\_\_

## Where is Groundwater located?

4. Groundwater is part of the \_\_\_\_\_ Cycle. (More commonly known as the \_\_\_\_\_ Cycle.)
5. How does water get into the soil? \_\_\_\_\_
6. Aquifer are sections of \_\_\_\_\_ that \_\_\_\_\_  
\_\_\_\_\_
7. How do we get the groundwater out of the ground? \_\_\_\_\_

## Types of Aquifers

8. List and explain the two types of aquifers.

Type of aquifer	How it is formed

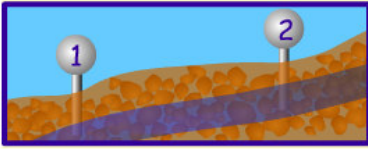
9. Which type is more likely to get contaminated and why? \_\_\_\_\_  
\_\_\_\_\_
10. Which type would be best of drilling a drinking water well into and why? \_\_\_\_\_  
\_\_\_\_\_

## How does groundwater move?

11. Groundwater moves through aquifers because of \_\_\_\_\_ and \_\_\_\_\_.

12. Answer the three questions for **Groundwater Direction in an Unconfined Aquifer**:

a)



b)



c)



**Groundwater Speed**

13. How fast does water in the following move?

- a. Rivers \_\_\_\_\_ b. Lakes \_\_\_\_\_ c. Aquifers \_\_\_\_\_

**Contamination Basics: Contaminants**

14. Contaminants are grouped in three main categories:

- a. \_\_\_\_\_ or ( \_\_\_\_\_ - \_\_\_\_\_ )  
 b. \_\_\_\_\_ c. \_\_\_\_\_

**Some Specific Contaminants**

15. List the six contaminants on this page and a brief description of each.


**Contamination Basics: Concentration**

16. What two things do you need to know about a contaminant to determine if it is a problem for an aquifer?

\_\_\_\_\_ and \_\_\_\_\_

17. What do ppm and ppb stand for and give an example of each?

	Stands for:	Example:
<b>ppm</b>		
<b>ppb</b>		

18. Which is a larger concentration, ppm, or ppb? \_\_\_\_\_

19. What did you notice about the *pptr* square after you click on the red dot? \_\_\_\_\_

**Effects of Contamination**

20. Why do we need to worry about 1 ppb of a contaminant of water; that is such a small amount?

21. Which chemical needs to exist in the least concentration in the groundwater in order to avoid hurting someone? \_\_\_\_\_

**Sources of Contamination**

22. List at least five sources of contaminants from this page.

23. From which sources can you find nitrates? \_\_\_\_\_ and \_\_\_\_\_

24. From which can you find gasoline products? \_\_\_\_\_ and \_\_\_\_\_

**Contamination Movement**

25. Contaminants move with what? \_\_\_\_\_

26. What happens as a contaminant moves? Explain. \_\_\_\_\_

27. What is a visual representation of concentration of contamination called? \_\_\_\_\_

28. There are two main categories of contamination sources, fill in the chart below:

Source type	Color picture

29. How the plume looks depends on what four things? \_\_\_\_\_

**Area of Contamination**

30. Why is it important to discuss the area affected by the **SPREADING** of the contaminant? \_\_\_\_\_

### Real Plume Example

31. Answer the following questions about the “real” plume problem.

Where is the source of the contamination?	
Is the source continuous or a one-time event?	
Based on the direction of the plume, which way is the groundwater moving?	
How far does the contamination travel in 16 years?	
What important areas of the city are affected by the contamination?	

### Testing for Contamination

32. Since the contamination plume is underground it is not visible to scientists, what must they do in order to determine where the contamination plume is? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Plume Source Game

33. Play the game at least two times and fill in the chart below.

	Source of Plume	Money Left	Picture of Plume
1			
2			

### Cleaning up Contamination

34. When an area is contaminated why might the soil need to be cleaned along with the water? \_\_\_\_\_

\_\_\_\_\_

35. List the three specific cleaning methods discussed on this page and give a brief description of them.

Cleaning Method	Description

### Prevention of Contamination

36. Prevention is BEST!!! What are three ways people can help to prevent contamination? \_\_\_\_\_

\_\_\_\_\_